STREETCARS OF AMERICA

BRIAN SOLOMON & JOHN GRUBER

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COVER IMAGE

One of Boston's former Dallas double-ended PCC cars wears a fresh coat of paint at the Reservoir Cutback on July 5, 1959—the opening weekend for MTA's new Riverside Line. (Richard Jay Solomon)

TITLE PAGE IMAGE

A Boston MTA PCC glides off the elevated at Lechmere. (Richard Jay Solomon)

CONTENTS PAGE IMAGE

A Pittsburgh Railways PCC takes a corner at Diamond Street at 3 p.m. on July 9, 1958. Pittsburgh. (Richard Jay Solomon)

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INTRODUCTION

A WHIRR of motors and clang of bells announced the electric streetcar. In the late nineteenth and early twentieth century, before the dominance of automobiles, electric railway cars were a common fixture of cities and towns across North America. Well-polished tracks and overhead wires defined streetcar routes. The novelty of trolley cars was supplying the masses affordable and convenient urban transport.

In the early days trolley cars themselves were built to a few common patterns, and yet were produced in uncountable varieties. Colorful bouncing trolley cars were as much a feature of American life as was baseball, newspapers, and the corner store.

Millions rode the cars daily. Trolley cars took workers to their jobs, children to school, and housewives to downtown shops and department stores. On weekends, trolleys provided leisure, bringing people to the seaside, to lakes, to specially built amusement parks, and in summer on rides away from the city heat.

Electric street railways made their debut in the 1880s. These were among the earliest commercial applications for electricity. Yet early efforts were plagued with technical problems as inventors perfected practical means for harnessing the new technology. Public fear and skepticism of electricity didn't help matters. While some thought the idea was ridiculous, others were terrified by the prospects of electrical power. People asked, "How could 'lightning' be a safe way to propel a railway car?"

However, the limitations of horse-drawn trams and an insatiable demand for transport fueled the need for refined technology. As soon as it became practical to run cars with electricity, the concept was widely adopted. In 1887–88, Frank J. Sprague demonstrated the first large commercially successful electric railway, in Richmond, Virginia. Within a year hundreds of similar schemes were being considered, and by 1900 most large American cities had electric streetcars whirring through their streets.

Opposite: Motorman and conductor pose with their double-truck open car at Salem Square in Worcester, Massachusetts. This was bound for Leicester and Spencer, Massachusetts. Many New England street railways used open cars like this one in warmer months.

Trolleys were popular postcard subjects in the early twentieth century. A classic single-truck open car is portrayed at Park Place in Rockville, Connecticut, in this hand-tinted view about 1906. By 1910, most of Connecticut's electric street railways were controlled by the New Haven Railroad.

The concept was pushed further, and in the 1890s the interurban railway was born. Electric cars connected cities with smaller towns, and no longer was the street railway limited to major centers. Soon tiny towns all across the nation had one-track trolleys running through their streets or along the sides of country roads.

The streetcar boom peaked in the first decade of the twentieth century. By the end of World War I, the popularity of the streetcar was already beginning to wane. Public investment in paved streets facilitated commercial development of the automotive industry, and what began as a rich man's leisure vehicle rapidly evolved into everyman's transport. The advances of the automobile first doomed the light interurban electrics, and then threatened

An interurban electric car runs along the roadside at the Delaware Water Gap. Between 1907 and 1928, this short-lived line connected Stroudsburg, Pennsylvania with the Delaware Water Gap. The tracks to the right and the bridge beyond were both owned by the Lackawanna Railroad.

In the early twentieth century, no major city street was complete without a streetcar. Providence, Rhode Island, like all New England cities, enjoyed transport by electric streetcars.

city streetcars too. Automotive technology allowed for development of the motor bus, which rapidly became the chief competition for streetcar lines. Widespread abandonment of streetcar lines began in the 1920s and accelerated in the 1930s, when most small towns and cities dispensed with trolleys in favor of buses.

On July 24, 1946, Birney safety cars grind along the streets of Albany, New York, surrounded by the automobiles that contributed to their demise.

Not only were buses free from the constraints of railway infrastructure, allowing routes to be easily changed, but they also offered curbside service, obviating the long-standing problems associated with boarding streetcars in the middle of the street. In congested areas, buses were better able to navigate traffic jams. Perhaps most important was the change in attitude toward trolley cars. In their early days trolleys represented the zenith of modern technology, but by the 1930s they seemed old fashioned. As America tired of electricity and embraced automotive culture, the city governments that had been so eager to adopt streetcars a generation earlier were now keen to get the old cars off the streets, clearing the way for automobiles.

Yet, despite an overall decline in the industry, streetcar companies sought ways to improve their services and modernize their appearances. In 1929, the presidents of key streetcar companies united to form a design team to develop a modern standardized car that incorporated the latest fashions in transport and offered a better ride.

Johnstown Traction Company Birney car takes the corner at Chandler and Strayer Streets in Oakhurst, Pennsylvania, on July 6, 1958. This double-track Birney car was built in Springfield, Massachusetts, by the Wason Manufacturing Company. Today it is preserved in working condition at Pennsylvania's Rockhill Trolley Museum.

The breeze from the open front window was appreciated on this sultry afternoon in August 1958. Unairconditioned PCCs working Baltimore's No. 8 Catonsville route pass near Poplar Avenue.

Out of this effort, the Presidents' Conference Committee Car (PCC car) emerged. This technologically advanced trolley featured an automotive-inspired streamlined design. John W. Hession, Jr., known as a designer of auto bodies, designed the prototype in 1934, which demonstrated on the streets of Chicago for about a month. It then went to Cleveland for the American Transit Association convention. The design patent, which incorporated changes made after the demonstration, was filed in 1937 in the name of Dan Bell of the Pittsburgh Railways Company.

The production PCC car was introduced in 1936, and soon became the new face of the North American streetcar. Dozens of cities ordered them and five thousand cars were built between 1936 and 1952.

Another change was the shift of transit operations from private to public organizations. Originally, all American transit systems were run by private companies. In many cities service was provided by myriad companies, which often competed with one another. The promise of easy profits from the flood of nickel fares encouraged competition, and in the early years different companies sometimes built parallel routes along city thoroughfares. In most cities amalgamation resulted in unified systems by World War I. However, as labor costs increased and fare revenues declined, transit companies found it increasingly more difficult to turn a profit. Gradually municipalities assumed control.

While small-town streetcars had largely vanished by the 1930s, most larger North American cities retained electric cars on busy routes through World War II, with some cities such as Philadelphia, Pittsburgh, and Toronto maintaining very extensive networks well into the automotive age. Wartime gas rationing brought peak ridership of 12.137 million in 1944. Yet, after the war, a move to convert streetcar routes to bus routes proved overwhelming, and across the continent one city after another gave up on the trolley. A few cities clung to core systems, often where trolleys served subway lines, such as in Boston, Newark, and Philadelphia. Most surviving streetcar lines featured streamlined PCCs. There were a couple of notable exceptions: New Orleans retained an electric system free from streamliners and operated in classic two-man fashion, while San Francisco retained a core of its once-extensive cable car network, a system that predated the move to electric operation.

Despite its fall from grace, the electric trolley never completely vanished. Then, beginning in the 1980s, the old trolley car concept was revived. Cities rediscovered that electric trolleys—by then re-branded and redefined as "light rail"—offered a clean, efficient, and pleasant means of moving people. Pioneering new electric lines were built in Edmonton, Calgary, and San Diego—cities that had completely abandoned trolleys a generation earlier. Over the next decade the light rail movement caught on, and numerous American cities began planning and installing modern networks, while old trolley cities such as San Francisco expanded historic systems by adding new routes and buying modern cars.

Another change was driven by nostalgia; what was once commonplace came to be seen as a tourist attraction. In the 1990s, cities and towns began installing historic streetcar routes using restored vintage cars, imported trams, or replica streetcars. Some cities, such as Boston, Philadelphia, and San Francisco, assigned historic trolleys on regular revenue routes. Others, such as Kenosha, Wisconsin, incorporated historic streetcars into their existing transit systems. The movement continues to gain impetus and the list of new lines and expanded streetcar systems grows ever longer.

ORIGINS OF URBAN TRANSIT

During the mid-nineteenth century, the rapid population growth in American cities demanded more efficient means of moving people. Urban centers were the focus of American industry and commerce; factories and offices developed as primary employment and often required workers to travel farther than traditionally possible on foot. This need for better transport resulted in the wedding of railway and omnibus technologies in the form of the lightly built street railway. Horse-drawn trams with iron wheels on iron rails could be larger and heavier than simpler horse-drawn omnibuses.

More to the point, rails offered a major improvement for speed and comfort at a time when many streets were little more than rutted mud-covered lanes that were difficult to use in the summer and virtually impassable in winter.

The earliest street railways developed in parallel with the commercial steam railroad. One of the first lines is believed to have been a short tram railway in Baltimore in 1828, begun about the time America's pioneer steam railroad, Baltimore & Ohio, was planning its course west. Better known and more significant was a street railway extension of the New York & Harlem Railroad into Lower Manhattan by way of Park Avenue in 1832.

Although several cities had horse-car routes in the 1850s, street railways remained relatively obscure until after the American Civil War, when the concept flourished in many cities. The cars were similar to omnibuses; they were characterized by lightweight wooden carriages about 16 feet long with open platforms at both ends and covered by a wooden-framed canvas turtle-back roof. While horse cars offered a smoother ride and greater capacity than omnibuses, they suffered from high operating costs, slow speed, and were greatly limited in hilly territory. While some companies assigned teams of horses to haul cars on hills, generally speaking horse-car lines tended to focus on more level routes.

In the 1870s and 1880s, the desire to find a more efficient means of powering streetcars led to a variety of inventive solutions. Some companies employed small steam locomotives. These tended to frighten horses, resulting in requirements that street engines be fully enclosed. The result was a disguised machine that resembled a horse car called a "steam dummy," used to haul one or more unpowered horse-car-like trailers.

The transit conundrum attracted many inventive minds and produced novel means of propulsion. Most were spectacularly unsuccessfully, yet in the early 1870s Andrew Smith Hallidie's cable system successfully solved the problem of moving cars up and down steep gradients. While first and most famously applied in San Francisco, cable-car street railways flourished briefly in America. More than thirty cities adopted the system, with the most extensive cable-car network operating in Chicago.

The potential of electrical propulsion had encouraged inventors to dabble with the new technology since the 1830s, but it was the invention of electric dynamos and related technology in the 1860s and 1870s that finally allowed for practical development of electric propulsion technology.

Like other emerging technologies, electricity simultaneously attracted the attention of many different inventors and engineers. No single inventor can claim the electric streetcar. In 1879, German engineer Werner von Siemens demonstrated an electric locomotive in Berlin, and two years later opened a short electrically powered railway near Berlin at Lichterfelde.

CABLE CARS

British-born Andrew Smith Hallidie was a San Francisco wire-cable manufacturer. Having observed the difficulties faced by San Francisco's horse-drawn street railways and engineered a solution, in 1873 he adapted cable innovations for public transport and established the Clay Street Hill Railroad. This met with immediate success, and generally is deemed the first commercially successful cable-hauled street railway. It led to almost immediate imitation. Not only did cable cars grace San Francisco's precipitously steep streets, but more than thirty other cities across the United States embraced Hallidie's improvement. Most cable-car networks were supplanted by electric street railways by 1905. Seattle's cable cars survived until the eve of World War II, and only a fragment of San Francisco's network survived into modern times.

(Siemens' early electric railway used both running rails for electrical supply, which exposed passersby to electric shocks if they came in contact with the live rail.) Meanwhile, in 1880, American inventor Thomas Edison built a demonstration electric railway at Menlo Park, New Jersey.

During the mid-1880s, Englishman Leo Daft, and Belgian Charles J. Van De Poele, independently of one another, built short electric railways in various North American cites. Among De Poele's pioneering lines were railways in Appleton, Wisconsin (1886); South Bend, Indiana; Montgomery, Alabama (1886); and Lima, Ohio (1887).

During 1887–88, Frank Julian Sprague, a young associate of Thomas Edison, built and wired a groundbreaking 12-mile electric railway in Richmond, Virginia. While by no means the first trolley line, this was by far the most ambitious project undertaken to date. It was the longest electric line opened, featured some exceptional steep grades, and resulted in refinement of key motor technology. While initially plagued with technical difficulties, Sprague's efforts were in essence an application-laboratory, and his success with the Richmond system spurred widespread interest in electric street railways.

Opposite: A classic train-shed protects passengers from the summer heat in 1939 as they board streetcars at the Oklahoma City terminal. Streetcars provided a valued service in most American cities through World War II.

Sprague's innovations included nose-suspended axle-hung traction motors below the car floor that engaged axles using reduction gearing, and this set a precedent throughout the industry. He also provided successful adaptation of the trolley pole (similar to that first used by De Poele) to collect electric current from overhead wire.

Sprague's success fueled voracious interest in electric street railways; some estimates indicate that by the end of 1889, more than two hundred

trolley-car schemes were planned in North America. By 1900, most major cities had electric cars buzzing along their streets, while interurban electric lines were rapidly connecting towns, small and large, across the country. Some thirty thousand cars were working under wire. By 1917, they carried 14.507 million passengers annually. Electric railways had become part of the American urban fabric, carrying tens of millions of passengers annually.

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FROM THE MAINE COAST TO THE GULF COAST

The heavily populated industrialized eastern states were among the first to embrace steam railways and horse car lines, so it followed logically that the east would boast some of the first and most extensive electric street railways.

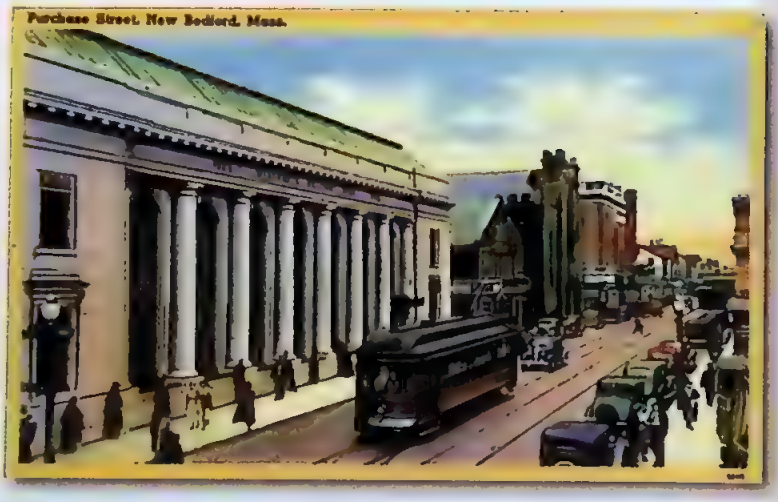
New England and the Mid-Atlantic states enjoyed exceptionally developed streetcar networks. Boston was the third American horse-car city with the opening of the Union Railway Company in 1856. By 1870, Lowell, Springfield, and Worcester, Massachusetts all operated horse railways. Lynn, Massachusetts, was an electric pioneer, and Boston was early to begin electric operations. More significantly, in September 1897, Boston opened its trolley subway—the first of its kind in the United States.

As New England's largest city, Boston's street railways developed as the most extensive and most complicated in the region. In the early twentieth century Boston's city streetcar companies and urban rapid transit lines were consolidated as the Boston Elevated Railway. In 1916, this network operated 229 route miles of streetcar lines.

Far more expansive was the vast Bay State Street Railway, formed from unions of dozens of smaller companies. In its heyday, this regional system connected cities from Newburyport and Lowell to Boston and south to Brockton, Taunton, New Bedford, and Fall River. Like Europe's late great Austrian-Hungarian empire—one of the great powers in its day—the Bay State Street Railway has been almost totally forgotten. In 1917, its operations were brought under state administration when the company was reorganized as the Eastern Massachusetts Street Railway. Typical of interurban lines connecting small towns, it vastly scaled back operations during the 1920s and 1930s, with many routes converted to buses. Its last rail operations were routes from Boston to Shoreham and routes in Quincy, both of which survived through World War II, but its final cars ran in 1948.

A year earlier, the Boston Elevated Railway was brought under state ownership as the Metropolitan Transit Authority and over the next decade

Opposite: Pittsburgh's once extensive streetcar system connected downtown with various outlying suburbs. While most lines were closed in the 1960s and 1970s, a few surviving routes were integrated into a modern light-rail system in the 1980s. This early 1960s view shows a Pittsburgh Railways PCC car on the 48 Arlington Line.



A tinted postcard view showing a Union Street Railway car on Purchase Street in New Bedford, Massachusetts. This was one of eighteen double-truck convertible cars built between 1917 and 1918 for USR. (Side windows could be removed in summer.) New Bedford was also the southern terminus for a long route of the Bay State Electric Railways, later Eastern Massachusetts Street Railways.

converted most of Boston's streetcar routes to either conventional buses or electrically operated trolley buses. Yet, a few lines that served the Park Street Subway were preserved, as well as a rapid transit extension between southern suburbs of Matapan and Ashmont.

In the late 1950s, Boston made the unusual move of converting New York Central's Boston & Albany Highland Branch heavy rail route to trolley service, connecting this line with Park Avenue Subway near Back Bay. It was the first new trolley line to open in the region in many years.

Boston's trolleys wore variations of "traction orange"—a shade that varied from burnt brown to tangerine and graced street railways across the United States. This survived longer in Boston than anywhere else, with PCCs dressed in orange and cream serving well into the Massachusetts Bay Transportation Authority era. The MBTA, or simply "the T" colloquially, was the successor to the MTA and assumed operation of most Boston-area public transport in the 1960s and 1970s.

Steam railways viewed many upstart electric lines as competition. What began as feeders to conventional railways soon offered parallel services when streetcar routes were extended between cities. In southern New England, the New Haven Railroad aimed to dominate ground transportation; not only did it buy up most of the steam railways in its service area and take control of important connecting railways, such as Boston & Maine, but in the early twentieth century it took control of many electric lines as well, including city and interurban lines serving Worcester and Springfield, Massachusetts, and virtually every street railway in Connecticut (which it had consolidated by 1910 as the Connecticut Company).

Boston's trolleys wore variations of "traction orange"—a shade that varied from burnt brown to tangerine and survived here longer than anywhere else. This view dates from July 1960, but some PCCs wore orange and cream into the early 1980s.

Boston's only double-end PCCs were seventeen cars acquired from Dallas, Texas, in 1959. One of the recently arrived double-enders works the Matapan–Ashmont high-speed line, an isolated trolley route that served as an extension of the Red Line Subway. Tracks to the left of the trolley line belonged to the New Haven Railroad.

New England's intensive streetcar network helped to support local streetcar manufacturers. Worcester was home to Osgood-Bradley, which became part of railcar-builder Pullman-Standard in 1931. Springfield's Wason Manufacturing Company was a carryover from the horse-car era. This merged with Philadelphia's J. G. Brill Company in 1906, but remained active until 1932 when Depression-era economics finally forced its closure.

The Springfield Street Railway ended operations in 1940, while Worcester's cars ran through World War II and were converted to buses in late 1945. Connecticut Company continued to operate the once-common double-truck open cars in New Haven into the late 1940s, and famously pressed these classics into overflow service for Yale Bowl games.

A handful of small northern New England electric lines held on later than others, making them noteworthy for their relative longevity. The Biddeford & Saco River connected towns along the southern Maine coast until 1939. By outlasting other regional trolleys by just a few years, it had earned a nostalgic following, and so when it folded, it spawned America's first electric railway preservation effort, the Seashore Trolley Museum.

New York City once boasted the most intensive and complex streetcar network in the United States. At the turn of the twentieth century, there were no fewer than six streetcar companies operating in Manhattan alone; the 13-mile-long island was crisscrossed with more than 300 miles of streetcar track. Myriad lines were largely consolidated into two companies, with the Metropolitan Street Railway briefly dominating the scene. Despite extensive operations, this system was financially devastated by the bankers' panic of 1907 and reorganized as the New York Railways, and briefly controlled by rapid transit interests.

Manhattan street railways were discouraged from using overhead wires, which were seen as obtrusive by city residents—not only were trolley wires forbidden, but local ordinances also compelled the burying of telephone, telegraph, and public electrical supply-lines. In Manhattan streetcars were largely powered via a third rail in a conduit below ground and between the running rails, a system adapted from cable-car operations. New York, Washington, D.C., Budapest, and London all used variations of the conduit system.

The decline of streetcars in Manhattan occurred sooner and more rapidly than in most northeastern cities. The reasons for this early decline were linked to New York's investment in rapid transit systems (first in overhead railways, and after 1900 in construction of competing subway lines), while in the 1920s city government was opposed to streetcars occupying city thoroughfares and actively encouraged early bus conversion. New York Railways had operated principal uptown–downtown routes via

New York City's Third Avenue Railway car 1204 works northbound under the "El" in the Bronx on the main line of the Webster Avenue & White Plains Road route. This was one of twenty-five Staten Island cars acquired in 1934.

Lexington, Park, Madison, 7th, 8th, and 9th Avenues, as well as Broadway, and major cross-town lines. It made its final runs in 1936.

The Third Avenue Railway, which operated an estimated one thousand cars in Manhattan and the Bronx in 1930, survived until after World War II. It did not adopt PCCs, instead embracing fleets of more conventional-looking lightweight cars. Its Manhattan operations concluded in 1946, with cars in the Bronx ending two years later. Its final operations were on the run to Yonkers, which finally ended in 1952. Some of Third Avenue's streetcars were sold for operation in Vienna, Austria, and Bombay, India.

Streetcar services survived longer on Brooklyn and Queens Transit's lines, which operated more than 2,100 cars in 1930. The popular PCC car made its commercial debut in Brooklyn in 1936. A public ceremony was ironically conducted by streetcar-hostile Mayor LaGuardia who cut the ribbon for the first car. Twenty years later service concluded.

Other New York State metropolises also enjoyed excellent streetcar systems, but these declined rapidly with the advent of public auto ownership and the introduction of bus services. In the capital at Albany, streetcars lasted through World War II. In 1927, Rochester converted a portion of the old Erie Canal into an electric railway subway. This survived until 1956, making it one of the last cities in the Empire State with trolley cars but also giving it the dubious distinction as one of the few world cities to abandon a passenger subway (freight services continued in portions of the subway for decades).

In 1936, Brooklyn and Queens Transit was the first operator of production-built PCC cars. Ironically, it was New York's Mayor LaGuardia (for whom the airport is named and who was notoriously hostile to the city's streetcars) who cut the ribbon on the new cars. This Brooklyn PCC was photographed in its final months of service in 1956.

New Jersey Public Service was a statewide streetcar operator formed in 1903 from the consolidation of various electric railways. A vintage postcard view features Public Service cars at City Hall and Market Street in Paterson.

Covering 850 route miles, New Jersey once boasted one of the largest and most extensive unified electric railway systems in the United States. Like New England trolley systems, New Jersey Public Service blended city streetcars, suburban and interurban electric routes. This statewide railway network set a conceptual precedent for modern-day NJ Transit, America's only statewide public transportation agency, which operates integrated light rail, bus, and commuter rail transit services.

NJ Public Service streetcars served longest in Newark, Hoboken, and Jersey City. In 1954, remaining lines were closed, except for the 4-mile-long Newark City Subway, which was re-equipped with second-hand PCCs bought from Minneapolis. This route survives to the present day, now one of several "light rail" lines today operated by NJ Transit.

Philadelphia was a true trolley city; it was home to J. G. Brill—America's most prolific streetcar manufacturer, and enjoyed one of America's most extensive city streetcar networks, as well as being served by suburban and interurban electric lines.

By the mid-nineteenth century, Center City (Philadelphia's downtown) had been blessed with numerous horse-car lines; an estimated thirty-nine different streetcar companies were chartered between 1857 and 1874. Its streetcar lines, along with many others in Pennsylvania, were built to an unusual broad-gauge track; 5 feet 2½ inches (1522 mm) between

The 4-mile Newark City Subway is the last vestige of the once-sprawling New Jersey Public Service electric railway system. The thirty PCC cars were acquired second-hand from the Twin Cities Rapid Transit Company and worked the City Subway for four decades. Several have been preserved. This view is from February 1962.

the rails. By contrast, most American streetcar lines used the 4 foot 8½ inch (1435 mm) standard, common to most railroads. Some authors have suggested that the non-standard gauge was mandated by the steam railroads to prevent freight interchange between electric streetcar companies and the established steam roads.

In its heyday, revenue from more than 500 million passengers annually made for a lot of nickels in the Philadelphia fare boxes. In the early part of the twentieth century, Philadelphia experimented with innovative modern fare collection, including a "pay as you leave" system that involved a large fleet of specially designed trolleys called "nearside cars"—so named because their door arrangement necessitated stopping at the nearside of an intersection to collect and discharge passengers.

By 1908, most of Philadelphia's 620 line miles had been consolidated under the Philadelphia Rapid Transit Company (Philadelphia Transportation Company after 1940). Yet, the Fairmont Park Transit Company remained independent and, until 1946, ran electric cars through Philadelphia's extensive park system, connecting park areas via the Strawberry Bridge over the Schuylkill River. This bridge survives today complete with evidence of the old trolley line.

Another independent was the Philadelphia Suburban Transportation Company, known as the Red Arrow Lines, which connected Philadelphia's western suburbs from the 69th Street terminal in Upper Darby. In later years, Red Arrow was one of the few lines to run modern cars built by J. G. Brill, including both the 1920s-era Master Units, and the Brilliner—built as competition for the PCC car.

Just after 1 p.m. on September 7, 1957, a Philadelphia Transportation Company Peter Witt works Center City (Philadelphia's central business district) at 12th and Market Street.

Philadelphia's Fairmont Park trolley system remained independent from Philadelphia Rapid Transit Company (and its successor, Philadelphia Transportation Company), which operated most of the city streetcars. Although the Fairmont Park trolley was abandoned in September 1946, in many places its right of way survives.

Philadelphia remained dedicated to streetcar services through World War II. Beginning in the 1930s, PRTC bought large numbers of PCCs. Streetcar services were scaled back dramatically from the 1950s. Complete unification of Philadelphia area transit occurred in the late 1960s with public ownership under the Southeastern Pennsylvania Transportation Authority (SEPTA). Yet, Philadelphia was one of only a few American cities to retain some classic street routes. Surviving lines are largely focused on former Philadelphia Transportation Company lines serving surface-subway routes and a pair of former Red Arrow lines. Tracks from other city lines have been retained in many places, offering a visual link to days gone by, and in 2005,

Passengers at Red Arrow Line's 69th Street Terminal in suburban Philadelphia observe the arrival of a Brill Master Unit on November 23, 1958. Philadelphia's J. G. Brill was the largest builder of American trolley cars and it built lightweight Master Units for many streetcar systems in the late 1920s and early 1930s.

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Just after 1 p.m. on September 7, 1957, a Philadelphia Transportation Company Peter Witt works Center City (Philadelphia's central business district) at 12th and Market Street.

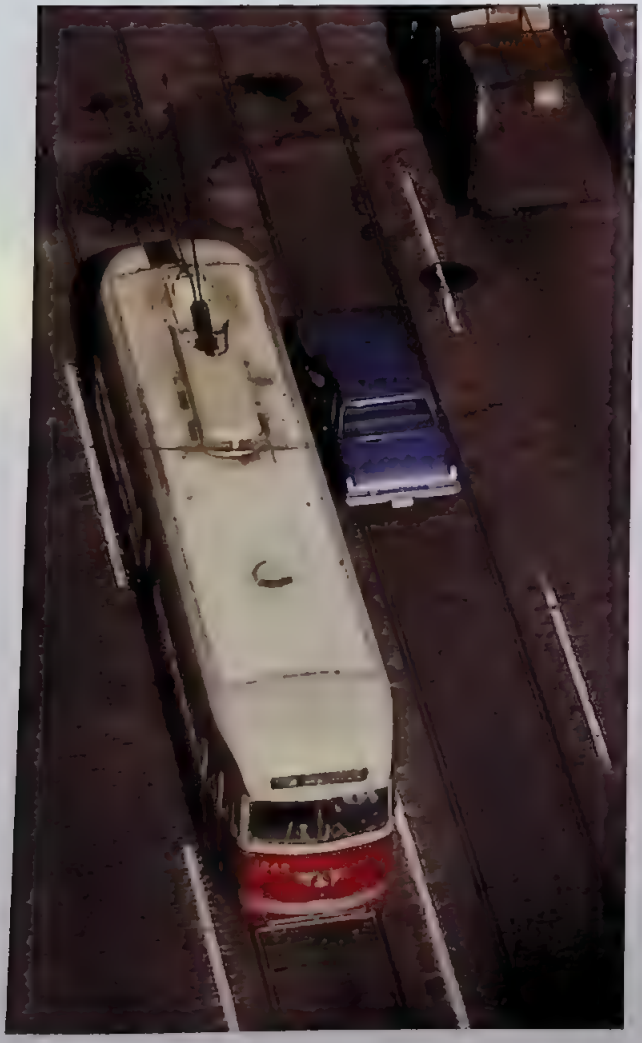
Philadelphia's Fairmont Park trolley system remained independent from Philadelphia Rapid Transit Company (and its successor, Philadelphia Transportation Company), which operated most of the city streetcars. Although the Fairmont Park trolley was abandoned in September 1946, in many places its right of way survives.

Philadelphia remained dedicated to streetcar services through World War II. Beginning in the 1930s, PRTC bought large numbers of PCCs. Streetcar services were scaled back dramatically from the 1950s. Complete unification of Philadelphia area transit occurred in the late 1960s with public ownership under the Southeastern Pennsylvania Transportation Authority (SEPTA). Yet, Philadelphia was one of only a few American cities to retain some classic street routes. Surviving lines are largely focused on former Philadelphia Transportation Company lines serving surface-subway routes and a pair of former Red Arrow lines. Tracks from other city lines have been retained in many places, offering a visual link to days gone by, and in 2005,

Passengers at Red Arrow Line's 69th Street Terminal in suburban Philadelphia observe the arrival of a Brill Master Unit on November 23, 1958. Philadelphia's J. G. Brill was the largest builder of American trolley cars and it built lightweight Master Units for many streetcar systems in the late 1920s and early 1930s.

SEPTA revived the long-dormant number 15 streetcar route along Girard Avenue using historic PCCs.

In its heyday as America's steel-making capital, Pittsburgh had an incredibly dense electric railway network, and this was characterized by trackage through its hilly maze of urban byways with ascents of unusually steep gradients. Streetcar lines were the domain of the sprawling Pittsburgh Railways (PRys), a unified system sewn together from 114 different companies. At its zenith it operated roughly 600 route miles. As late as the early 1930s—prior to the introduction of PCC cars—PRys employed more than 1,200 trolleys.



A Pittsburgh Railways PCC car navigates the concrete highways of the Golden Triangle. Similar to other Pennsylvania systems, Pittsburgh streetcars used broad-gauge tracks, measuring 5 feet 2¼ inches between inside flanges.

Where Brooklyn made PCC-history as the first to introduce modern PCC cars to operations, it was PRys that had purchased the first production PCC car. Ultimately it assembled a fleet of 666 cars—the second largest fleet in the United States after Chicago.

Pittsburgh boasted one of America's last surviving large street-railway systems and operated many routes well into the 1960s. Rapid conversion to buses followed assumption by Port Authority of Allegheny County; yet while most street running was abandoned by the 1980s, Pittsburgh never completely gave up on electric traction. Its surviving trolley routes were amalgamated into a regional light rail system that added new lines, and included operation of converted former steam railway routes. Its PCCs served on Castle-Shannon and Drake Shuttle services into the 1990s.

Johnstown, Pennsylvania, had the distinction of being the last small American city to operate streetcars, and the smallest city to invest in PCC cars. Johnstown

A PCC decorated for the Police Circus seen at Pittsburgh's Manchester Car House on July 7, 1958. Pittsburgh was decades ahead of its time in dressing selected cars in unique advertising schemes, a practice now common to transit systems around the world.

Traction Company operated a ragtag fleet of traditional double-truck trolleys and its seventeen PCCs until the system closed in 1960.

Until its streetcar service ended in 1963, Baltimore's 5 foot 4½ inch (1638 mm) track was the broadest gauge used by any electric trolley system in America. At its height, Baltimore had 1,300 trolley cars that plied thirty-five routes consisting of approximately 400 track miles. Before PCCs, Baltimore's trolleys were typified by Brill-built semi-convertibles dating from World War I, and early 1930s-era Peter Witt-style cars. By the time PCCs took over, the system had been trimmed to just thirteen routes.

Classic "Traction Orange" was the color of Johnstown Traction Company's cars. One of JTC's seventeen PCC cars passes the Moxham Carhouse at noon on July 6, 1958. This was the last small-city trolley system in the United States; if it had survived, it would be Johnstown's biggest tourist attraction.

Working Johnstown's Ferndale Line, car 350 nimbly crosses the Stoney Creek Bridge in December 1958. This steel-bodied lightweight car, built by the St. Louis Car Company in 1926, was a typical American streetcar from the period. Car 350 has been preserved at the Pennsylvania Trolley Museum. The Rockhill Trolley Museum fully restored sister car 355.

Among the curiosities in Baltimore's late-era fleet was a lone Brilliner, which had the status of an ugly duckling among the more svelte PCCs.

In its final years, the system was operated by the National City Lines, the transit operator controlled by automotive interests, which assumed control of various city streetcar companies and tended to rapidly substitute buses for streetcars. Since NCL control appeared to accelerate the demise of streetcar operations, its actions fueled conspiracy theories and an anti-trust case. Also, it tended to sell off transit services to government agencies

Baltimore Transit Company's fleet of 275 PCCs were built by both Pullman and the St. Louis Car Company. In 1963, BTC PCC 7359 exits a carhouse that clearly dates from an earlier era. By that time the end was near for Baltimore's traditional trolleys.

Baltimore's track gauge was 8 inches broader than standard gauge, giving it the widest streetcar gauge in North America. A PCC works across the Bear Creek bridge on the No. 26 route to Sparrows Point, just days before abandonment in 1958.

once a transition to buses had been made. National City Lines painted Baltimore's PCCs in its standard yellow and lime livery, common to its other operations including the Oakland–San Francisco Key System, and Los Angeles Railway streetcars.

Washington D.C.'s streetcar system neatly spanned a century, with horse-car service inaugurated during President Lincoln's administration in 1862 and electric cars concluding operations under President Kennedy in 1962. Electric operations began in 1888; however, like Manhattan, downtown Washington enforced a ban on overhead wires, meaning that its streetcars used the cable-car-like conduit system for electrical contact. Traditionally electric cars were operated by the Capital Transit Company and Washington Railway & Electric Company (which merged in the early 1930s). The final years of streetcar operations were conducted under the name D.C. Transit. Washington continued to invest in new cars during the 1920s, and as late as 1930 a fleet of some 784 conventional trolleys served the nation's capital. An unexpected transit traffic boom in the mid-1930s bucked the national trend, and as a result Washington D.C. ordered twenty PCC precursors in 1935. These cars were boxier looking and less technologically sophisticated than PCCs and had relatively short careers once true PCCs took over.

Washington was famous for its lone airconditioned PCC, dubbed the "Silver Sightseer." Introduced in 1957, this wore a distinctive paint scheme and warranted a special 40-cent fare—much higher than that charged for ordinary transit. Tourists were delighted by the innovation but some streetcar purists were unimpressed.

D.C. Transit 766 was built for Capital Transit Company by G. C. Kuhlman at the end of World War I. It is seen working an excursion on Connecticut Avenue on August 17, 1958. The car is preserved at the National Capital Trolley Museum in Montgomery County, Maryland.

Interurban electric lines and small-town streetcar systems were less prolific in southern states than in the northeast, yet most southern cities operated streetcars. Montgomery, Alabama's electric trolley system of 1886 was among the most extensive of its kind at that early date and the first all-electric American street railway operation. While it was soon eclipsed by Sprague's successful network in Richmond, it continued to serve into the 1930s.

The Birmingham Electric Company was the only southeastern system to invest in PCC cars. Its forty-eight cars were built in 1946 and entered service in February 1947, making Birmingham one of the last American cities to install new PCCs. The cars had the curious characteristic of sporting tinted blue standee windows. Birmingham's PCCs were very short lived; when they finished in 1953 they were sold to Toronto.

Most famous of all southern streetcars was New Orleans' Desire Line, popularized by the play by Tennessee Williams. At one time New Orleans had twenty electric lines. While its oldest horse-car line dated to 1835, the core of New Orleans' network traced its routes to the Canal Street line that opened about 1861. Since the 1920s, streetcar services have been operated by New Orleans Public Service. While the famous Desire line capitulated to bus operation in 1948 and the system curtailed most other streetcar lines, New Orleans retained its 6-mile St. Charles Street route, and has continued to operate the line with conventional two-man streetcars to the present day. The city opened its 1½-mile Loyola Avenue line in 1913.

In downtown areas, Washington D.C. streetcars used an electric contact-system in a below-ground conduit that obviated the need for overhead wires. D.C. Transit car 1053 was a precursor to the PCC that featured a less elegant body style than production cars.

Its classic cars were built by the Perley A. Thomas Car Works at High Point, North Carolina in 1923–24, giving New Orleans the distinction of being the last North American city with an original non-streamlined trolley line in regular service. In recent years, the popularity of its vintage trolleys has encouraged route expansion, although the city suffered serious setbacks as a result of hurricane Katrina in 2005.

New Orleans' Perley-Thomas cars were the last traditional two-man trolleys working in the United States. A car takes passengers at the Canal Street terminus in 1971.

TROLLEYS IN AMERICA'S HEARTLAND

The American Midwest was once laced with streetcar and interurban electric lines. Ohio, Indiana, Illinois, and Iowa were especially blessed with intensive interurban lines. While declines hit electric railways hard in the 1920s, Midwestern routes weathered better than those in most other parts of North America, with a few lines surviving in various forms until the present day. City streetcar lines survived into the PCC era in Cincinnati, Cleveland, Chicago, Dallas, Detroit, Kansas City, Louisville, Minneapolis-St. Paul, and St. Louis.

Except for Cleveland's Shaker Heights Rapid Transit and the Chicago South Shore & South Bend, all of the Heartland's traditional electric lines had ended passenger service by the 1960s. But a few traction curiosities persevered, notably electric freight operations in Iowa, Texas, and Wisconsin, each representing a vestige of once larger interurban networks.

Chicago is known as America's Railroad Capital. As the largest Midwestern metropolis it once boasted one of the nation's most extensive street railways, and before 1906, Chicago was also the largest operator of cable cars, with track mileage exceeding that of even San Francisco.

Electric cars gained a foothold in 1890 and soon covered Chicago's sprawling streets in a grid-like fashion radiating from the downtown Loop to the outer suburbs. As late as 1935, Chicago Surface Lines—as its trolley cars were known—worked ninety-seven routes consisting of more than 520 track miles. Before the PCCs arrived, the Surface Lines had more than 3,700 cars. These were dressed in a handsome red and crème livery. Characteristic of Chicago were its Pullman-built double-end, double-truck cars with old-fashioned clerestory roofs and ample capacity to absorb passengers. In the 1930s and 1940s Chicago enthusiastically embraced the streamlined PCC, opting for a variation of the car measuring 50 feet 5 inches long—10 percent longer than PCCs on most other systems. The surface lines boasted the largest PCC fleet in the United States, reaching 683 cars.

Opposite:
On May 10, 1946, Richard H. Young made this unusual view using infrared film showing a Dallas Railway & Terminal PCC car passing Young and 16th Street. Dallas obtained War Production Board permission to acquire the cars during World War II, and it bought twenty-five PCCs between 1942 and 1945.

On May 5, 1945, electric cars congregate at Oklahoma Railway Company's terminal at Grand Avenue and Hudson Avenue.

These large center-door cars were built in Cleveland by the Kuhlman Car Company for the Cleveland Railways. In later years they served the city's Shaker Heights Rapid Transit in rush-hour service. These were photographed outbound passing Shaker Square at 4 p.m. on July 11, 1958.

Chicago Transit Authority PCC car 7111 captured downtown near State and Harrison in about 1953. At its peak, Chicago had 683 PCCs, with cars built by both St. Louis and Pullman.

Chicago Transit Authority operated the city's surface lines in the final years of trolleys. After abandonment of the streetcar services, many of Chicago's PCCs were rebuilt for rapid transit on the "L"—elevated rapid transit. This view was exposed in March 1958 not long before surface-line operations ended for good.

Chicago, like New York City, embraced rapid transit early, and its overhead "L" (for "elevated") developed as primary urban conduits. Initially the "L"s were steam powered, using fleets of diminutive Forney-type tank locomotives to haul trains above the streets. The "L"s began electrifying in the 1890s and became best known for a complete circuit through downtown—universally known as "The Loop," which was actually so-named for the cable-car loops that predated the "L." As a result the surface lines evolved as feeders to the "L"s and other railway lines.

Some Chicago surface lines were exceptionally long, while a flat fare of 7 cents allowed passengers a one-way journey anywhere on the network. Yet, the average passenger only rode the cars for relatively short distances. In 1916, an extensive route-by-route analysis of the surface lines revealed that on many routes average journeys were between 1.6 and 2.7 miles, while on downtown lines at least 30 percent of passengers traveled no more than 1 mile and less than 10 percent of surface-lines riders traveled more than 6 miles.

As with most city streetcar systems, bus conversion began before the Great Depression. After World War II, the Chicago Transit Authority assumed operation of the surface lines and in the 1950s, CTA rapidly converted remaining lines to rubber tire transport. The Clark Street route held out until 1958. Since CTA's PCCs were still relatively new, many were transformed into rapid transit cars and continued to serve for decades.

In addition to its surface lines, Chicago was also served by interurban electric lines; most famous were the three Samuel Insull systems; Chicago North Shore & Milwaukee, Chicago South Shore & South Bend, and Chicago, Aurora & Elgin. The North Shore and CA&E both benefited from direct access to downtown over the "L" system that Insull also controlled,

Chicago North Shore & Milwaukee bought single-truck Birneys for Waukegan, Illinois streetcar service in 1920. Three years later, North Shore bought three more Birneys for its Chicago & Milwaukee Electric Railway streetcar service (shown here) in Milwaukee, Wisconsin. The fare was just 5 cents.

A vestige of The Milwaukee Electric Railway & Light Company continued to operate electric freight services on the segment between Mukwonago and East Troy, Wisconsin. In 1966, an East Troy car performs overhead line work using vintage equipment. Today the East Troy Electric Railroad is a popular trolley museum.

The twin cities of Minneapolis-St. Paul, Minnesota, enjoyed a well-developed streetcar network that reached nearly 525 miles at its peak. Bus replacements began in the 1920s, but streetcars survived until the early 1950s. This Great Depression-era view of 1939 shows a car yard at Minneapolis.

St. Louis hosted one of the oldest streetcar systems in the Midwest, with horse-car services beginning in 1859. It had a brief foray with cable cars from 1886 to 1901. Its first electric trolleys controversially worked its streets in 1888, but regular trolley service didn't begin until 1890; by 1900 electric lines covered an estimated 334 miles radiating from downtown to myriad points west of the Mississippi River. In the early twentieth century the city street railways were consolidated as the United Railways. After 1927 these were operated as St. Louis Public Service (SLPS). Services were dramatically scaled back in the years after World War II and the final line was converted to buses in May 1966.

Until 1956, an additional streetcar service was provided by Illinois Terminal (IT), a far-flung electric interurban line that also connected central

A St. Louis Public Service PCC car on the Wellston Loop surrounded by similarly styled buses on July 22, 1958. The PCC's art-deco streamlining set the tone for transit vehicle design between the 1930s and 1950s.

Illinois cities. In its final years, IT assigned big double-ended PCCs to its St. Louis–Granite City, Illinois trolley route.

St. Louis was home to the St. Louis Car Company, one of America's most prolific and longest surviving traditional trolley-car manufacturers. Late in the trolley-car era, St. Louis Car was the largest builder of PCC cars, which served all over North America.

In this classic streetcar vignette, an Omaha & Council Bluffs Bridge & Railway car makes the turn from Douglas onto 10th Street in Omaha, Nebraska on May 1, 1947.

F
41
SCOTT ST
MARINA
FORT MASON
CHINATOWN
SANTA FE
DEPOT
GALLO

WIRES UNDER CLEAR SKIES

In the classic era, western cities operated some of the most extensive and advanced electric transit networks. Californian cities were especially well served by electric railway development and Californian lines outlasted most western trolley systems. A rare holdout was El Paso, Texas, where the El Paso City Lines continued to operate a cross-border trolley to Juarez, Mexico via Santa Fe Street Bridge decades after trolleys had vanished elsewhere. Despite being operated by National City Lines in its later years, this curious route is understood to have survived because of a Juarez charter requirement mandating rail service (as opposed to buses). PCCs operated the cross-border route until 1973, while the domestic service in El Paso quietly ended in 1974. Forty years later, some of the cars survive and there is occasional discussion of reintroducing service.

SAN FRANCISCO BAY AREA

Horse cars populated San Francisco's more level thoroughfares by the 1860s. Then in 1873, San Francisco benefited from the pioneer adaptation of the cable car as street railway vehicles and over the next twenty years cable-car routes were constructed in places previously unmanageable with horse-car lines. Of the half-dozen cable-car companies of San Francisco's halcyon days, the most extensive was Market Street Cable Railway.

Successful electric streetcars from the 1880s onward threatened the superiority of the cable car, and while San Francisco's steep hills helped preserve the cable lines, the great San Francisco earthquake and fire of 1906 devastated the city and the cable-car routes. After the quake many routes made the transition to electric operation, yet cable cars coexisted with electric cars for decades. In the 1940s and 1950s San Francisco seriously considered complete abandonment of the cable-car system, but when the public objected, it compromised by retaining three truncated routes with just 4.7 miles of trackage.

Opposite: Between 1914 and 1951, San Francisco Muni's F-line streetcar served a north–south route via the Stockton Street Tunnel. It is seen in its final years working via former Market Street Railway trackage to the Southern Pacific Depot on 4th and Brannan. Beginning in 1995, the "F-line" designation was revived as a Market Street surface route served by vintage cars.

Fort Collins, Colorado, adopted single-truck Birney safety cars after World War I which roughly coincided with municipal operation of the city's compact streetcar system. Although service ended in 1951, car 21 was preserved allowing for development of a historic service decades later.

A Phoenix Street Railway double-truck lightweight car passes the B.P.O. Elks Phoenix Theatre in 1946, a year before the system was doomed by a disastrous carbarn fire. Today, Phoenix hosts both a modern light-rail system and trolley museum.

A vintage cable car goes for a spin at Powell and Market in May 1966. San Francisco was the first, last, and most famous cable-car city, but by no means the only one. New York, Chicago, Los Angeles, Seattle, and Omaha were noted for their cable-car systems.

A streetcar convergence at Powell and Market Street in San Francisco in May 1966. An outbound Muni PCC car on Market Street passes a Powell & Mason cable car. Except for San Francisco all the cities that operated cable cars replaced them with electric trolleys.

San Francisco was the first city in the United States to create a publicly owned transit agency (in 1912); its San Francisco Municipal Railway (Muni) was originally intended to operate the Geary Street trolley line, but as private operators faltered, Muni gradually assumed most of the city's transit services.

To encourage development in the 1910s and 1920s, Muni built new streetcar lines into San Francisco's western neighborhoods, and to reach Sunset District beyond Twin Peaks, Muni bored the 11,920-foot-long Twin Peaks Tunnel in 1918.

San Francisco Muni Type-L cars assigned to the C-Geary route catch the sun on Cornwall Street. Muni's Type-Ls were a steel double-truck design built by St. Louis Car Company between 1926 and 1928 and a typical city streetcar of the period. The C-route streetcar line ended with bus conversion in 1956.

In 1944, Muni absorbed the remnants of the much-neglected Market Street Railway. Years of under-investment had left Market Street Railway's track and cars in a sorry state, and under Muni administration its routes were largely converted to trolley buses. Although it scaled back its own streetcar operations after World War II, Muni retained several key electric lines. Muni invested in both new and second-hand PCC trolley cars during the 1940s and 1950s, which gradually supplanted a variety of older steel cars.

Muni's core network benefited from the tunnels and private rights-of-way developed in the 1910s and 1920s. When the new Bay Area Rapid Transit (BART) system was conceived in the late 1960s, a trolley subway was envisioned along with it beneath Market Street and connected with the Twin Peaks Tunnel. BART began subway service in 1973, and "Muni Metro" service began in 1979. To work Muni Metro routes, the city ordered modern Light Rail Vehicles from Boeing-Vertol—the transit car subsidiary of the aircraft manufacturer.

Key System's Bridge Units descend the San Francisco approaches from the Bay Bridge toward the East Bay Terminal at 1st and Mission Streets. For twenty years, Key System used these unique articulated lightweight cars in transbay service.

By the early 1980s, the transition was complete, and Market Street trackage was truncated, with portions only used for special occasions.

In the 1990s the Market Street route was restored and extended northwest over the line formerly occupied by San Francisco's freight-hauling Belt Railway to Fisherman's Wharf, and reinvented as the historic "F" Market Line. Muni has also invested in significant extensions to its other lines, including creation of an all-new "T" route working along 3rd Street.

East Bay communities centered on Oakland were well served by electric railways. Until 1940, Southern Pacific (SP) suburban electric lines competed with Key System cars. Historically passengers destined for San Francisco transferred to trans-bay ferries; this changed in 1938 with the opening of the San Francisco Bay Bridge, which facilitated direct electric railway service to a new terminal in downtown San Francisco. The benefit was short lived, because the new bridge facilitated highway traffic. SP's red electrics and Sacramento Northern's long-distance interurban runs were first to go.

In the late 1930s, Key System had bought modern cars called "Bridge Units," built with aluminum articulated bodies. When SP ended operations it picked up a few routes and staved off decline for a few years. After World War II, Key System was acquired by National City Lines, which ended East Bay streetcar services in 1948. A core network of bridge routes survived until 1958.

Sacramento Northern (SN) was an electric interurban owned by the Western Pacific Railroad. It connected San Francisco Bay with cities in the Central Valley. While SN focused on long-distance passenger operations and electric freight services, it also provided local streetcar services to

Western Pacific's electric subsidiary Sacramento Northern assigned single-truck Birney safety cars to local streetcar services. This SN Birney has been beautifully preserved at the Western Railway Museum in Rio Vista, which operates a section of former SN mainline.

CARLTON

MAPLE LEAF TROLLEYS

Streetcar development in Canadian cities mirrored that in the United States. By the early 1890s, the electric railway had found its place on Canadian streets. At its peak, Montreal enjoyed the most interesting and extensive system, which covered roughly 300 miles with 1,071 cars as late as 1930. Its most spectacular run was the Mount Royal Line featuring a precipitously steep 10-percent gradient and a short tunnel.

Montreal Tramways was unusual; instead of headlights the cars featured an illuminated bar with a row of shielded lamps at car fronts. Montreal was the third Canadian system—after Toronto and Vancouver—to embrace the PCC car. Montreal's most lasting contribution to transit operating practice was its pioneer use of the "pay as you enter" system of fare collection—introduced in 1905. Considered novel at the time, this system was widely adopted across North America and ultimately paved the way for single-man streetcar operation in many cities.

Toronto operated the second-largest Canadian streetcar network, which at its peak had approximately 250 miles of line and from 1921 was operated by the Toronto Transit Commission (TTC). Peculiar to Toronto was its non-standard broad-gauge track; 4 feet 10⅞ inches. From its earliest years of streetcar operation, TTC favored the Peter Witt-style car featuring a steel-frame center-door design. Ultimately, TTC bought 350 powered Peter Witts along with a large number of unpowered trailers. While a variety of cities had operated trailers, Toronto had a long history of using them and they survived there until 1954, longer than anywhere else in North America. TTC's powered Peter Witts lasted in regular service until 1963. Toronto embraced the PCC to a greater extent than any other North American city. In addition to hundreds of cars built new, cars were acquired second-hand from Birmingham, Cincinnati, Cleveland, and Kansas, ultimately giving TTC a fleet of 745 PCCs.

In the fifteen years following World War II, Canadian cities systematically abandoned streetcar services. Toronto was the sole exception and has

Opposite:
An early season snowfall has dusted the streets at Howard Park, Toronto in November 1970. Toronto Transit Commission acquired second-hand PCCs from several American cities. This car came from Cleveland.

Flanges squeal on Montreal Tramways car 2659 as it passes the King George Tourists rooming house in Lachine on May 4, 1958. Built in Montreal by Canadian Car & Foundry in 1930, this was part of an order for fifty single-ended lightweight trolleys. A sister car has been preserved at Maine's Seashore Trolley Museum.

retained its traditional streetcar system through to the present day and continues to operate extensive street trackage. The line along Bloor Street, which had been its busiest route, was closed in 1967 following opening of the Bloor–Danforth Subway in 1966.

Ottawa, Canada's capital, enjoyed an excellent streetcar system. It was operated by the Ottawa Electric Company until 1948, when it was controversially conveyed to public operation by the Ottawa Transportation Company (OTC). As was often the case, public operation was a step toward "bustitution," and from 1951 OTC systematically converted streetcar routes. Ottawa never operated PCCs, and its late-era operations were dominated by older double-truck steel-bodied cars built by the Ottawa Car Company Ltd using Brill trucks and other components. Its last new streetcars were four modern lightweights numbered in the 1000-series, built in 1947.

In addition to city streetcar systems, a few Canadian electric interurban lines operated passenger services into the late 1950s, including the Niagara, St. Catharines & Toronto and the London & Port Stanley in Ontario, and Quebec Light & Power.

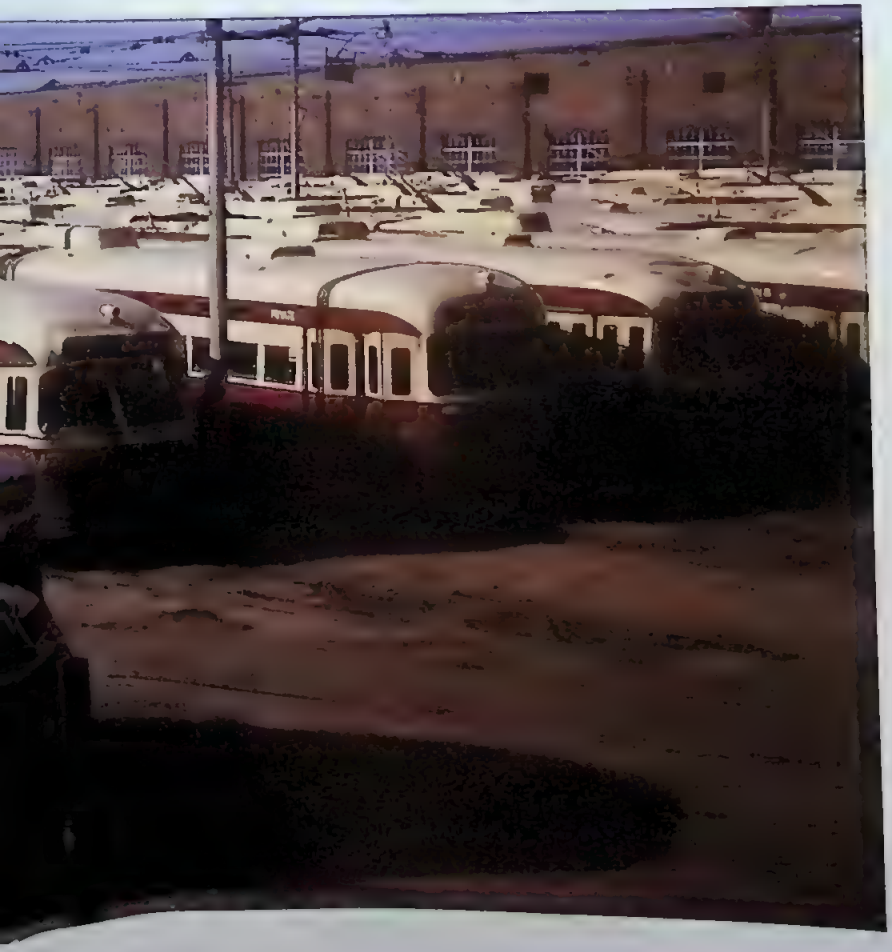
On the final day of Montreal streetcar service on August 30, 1959, Montreal Tramways car 1977 pauses at a street corner in time-honored tradition to collect passengers.

On August 20, 1958, a Peter Witt-style "pay as you enter" car collects passengers at King and Yonge Streets in Toronto. The Peter Witt car was developed in Cleveland around 1915, and was widely used in North America. Toronto's Peter Witts lasted until 1963.

Ottawa Transportation Company never operated streamlined cars—although it had four postwar lightweights. Many of its late-era cars were traditional double-truck steel-bodied Ottawa Car Company cars dating to the 1920s, three of which congregate at the Britannia turn-back stop on August 21, 1959.

This view of Toronto's Roncesvalles Carhouse in 1971 shows a virtual sea of Presidents' Conference Committee cars. Toronto Transit Commission operated more PCCs than any other North American city.

A Niagara St. Catharines & Toronto interurban car rests at its Thorold, Ontario, terminus on August 18, 1958. This was among the last Canadian interurban streetcars; passenger service concluded in 1959.



STOP
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1208
1208

ELECTRIC REVIVAL

The benefits of light urban electric railways were rediscovered in the 1980s. Now describing them as "light rail," city planners convinced many urban areas to re-adopt electric railways because of their inherent efficient use of energy, clean operation, and high capacity at much lower cost than a heavy rapid-transit line. The stigma associated with the old "Toonerville Trolleys" had faded. And new electric cars embody many modern features that please the public. In most places where light-rail systems have been re-introduced, ridership has greatly outpaced projections. Most modern light rail has a few notable operational differences from historic streetcars. Modern cars, known as "Light Rail Vehicle" (LRVs), often comprise articulated sets with more capacity than old trolleys. Stations tend to be well defined with platforms and canopies with full handicapped access. While many systems involve street running, often this is via semi-dedicated lanes. More often light rail enjoys a fully dedicated right of way.

In 1978, Edmonton, Alberta, was the first city in North America to introduce a complete new light-rail system, and was soon followed by San Diego, California, and Calgary. Since that time more than twenty North American cities have enjoyed the light-rail revolution, and joined the handful of cities that never completely abandoned the trolley. Among the cities operating all-new light rail systems today are Baltimore, Buffalo, Calgary (AB), Charlotte (NC), Dallas (TX), Denver, Edmonton (AB), Gaudalahara (Mexico), Houston (TX), Los Angeles, Minneapolis-St. Paul, New Jersey's Hudson-Bergen Light Rail (serving Jersey City, Hoboken and surrounding communities), Norfolk (VA), Phoenix (AZ), Portland (OR), Sacramento (CA), St. Louis, San Jose (CA), San Diego (CA), Salt Lake City, and Seattle-Tacoma. Cities with surviving traditional streetcar systems include Boston, Cleveland, Mexico City, Newark, New Orleans, Philadelphia, Pittsburgh, San Francisco, and Toronto. Many have added light-rail routes or upgraded older lines in recent decades. The light-rail revival continues as cities continue to explore the benefits of streetcar transport. America's trolleys live on.

Opposite: Minneapolis is one of more than a dozen American cities to re-adopt electric traction in the form of modern light rail. In 2010, a Blue Line train of Bombardier-built Flexity Swift cars passes downtown Minneapolis.

PLACES TO VISIT

TROLLEY MUSEUMS AND URBAN HISTORIC LINES

As the automotive age took hold, streetcars suffered from both declining traffic and a tarnished image. Fickle American attitudes that once regarded electric trolleys as modern after a few decades came to view them as dowdy, old fashioned and outmoded. While by 1940, cities were anxious to be rid of the old trolleys and the antique image they represented, not everyone shared these views. Here and there, loyal trolley enthusiasts embraced the fading age of the electric railway. They banded together and raised money to buy old streetcars and preserve portions of trolley line. This was America's formative railway preservation effort and out of it emerged trolley museums.

New England—a region once laced with trolley lines—led the way. Here, three pioneering trolley museums preserved cars at a time when streetcar lines were rapidly vanishing from North American streets. By the mid-1950s each had secured a variety of equipment with short sections of track to make demonstration runs. These museums endure thanks to help from volunteers, private donations, grants, and continued interest from the public who come to ride the old cars.

Among the gems of Maine's Seashore Trolley Museum is *City of Manchester,* a unique electric parlor car built in 1898 by the Briggs Carriage Company for New Hampshire's Manchester Street Railway.

The Seashore Trolley Museum, 195 Log Cabin Road, near Kennebunkport, ME 04046. Tel: (027) 967 2800. Website: www.trolleymuseum.org
Claims to be the oldest and largest trolley museum in the world with more than 250 vehicles in its collection.

The Connecticut Trolley Museum, 58 North Road, East Windsor, CT 06088. Tel: (860) 627 6540. Website: www.ct-trolley.org
Operates seasonally with a variety of classic cars. Its collection includes trolleys from Boston Elevated Railway, Connecticut Company, Montreal and many others. Favorites with visitors are Montreal Tramways observation car number 4 and various other open cars.

The Shore Line Trolley Museum, 17 River Street, East Haven, CT 06512. Tel: (203) 467 6927. Website: www.shorelinetrolley.org
Also maintains a diverse collection of trolleys, including several former Connecticut Company cars.

The Lowell National Historic Park, 67 Kirk Street Lowell, MA 01852. Website: www.nps.gov/lowe/
Centered on museums located in former textile mills in the city center, it operates a mix of replica streetcars and historic cars on electrified former Boston & Maine industrial tracks connecting the different museums.

Lowell National Historic Park operates authentic replica trolleys and historic cars in a nineteenth-century urban environment. This recreated Brill double-truck open car represents a typical type of car operating in New England cities in the early electric era.

The Shelburne Falls Trolley Museum, 14 Depot Street, Shelburne Falls, MA 01370. Tel: (413) 624 0192. Website: www.sftm.org
A much smaller scale museum where volunteers have beautifully restored a single wooden-bodied car built in 1896 for the Shelburne Falls & Colrain Street Railway. This is a rare operating example of the type of trolley once common in the region.

The Rockhill Trolley Museum, 430 Meadow Street, Rockhill Furnace, PA 17249. Tel: (814) 447 9576. Website: www.rockhilltrolley.org
Operates several perfectly preserved cars, including Johnstown Traction Company 355—a double-truck steel car built in 1925 by St. Louis Car Company—and JTC 311—a classic double-truck Birney car built by the Wason Manufacturing Company in Springfield. It also has examples from Harrisburg and York, Pennsylvania.

The Electric City Trolley Museum, 300 Cliff Street, Scranton, PA 18503. Tel: (570) 963 6530. Website: www.ectma.org
Features an electric railway museum and runs a section of the former Laurel Line interurban beginning adjacent Steamtown National Historic Site and continuing south through the old Crown Avenue Tunnel.

The Pennsylvania Trolley Museum, 1 Museum Road, Washington, PA 15301. Tel: (724) 228 9256. Website: www.pa-trolley.org
Centered on Pennsylvania street railways, this offers one of the nation's best-preserved streetcar collections, featuring cars built by Brill, St. Louis Car Company, and Jewitt Car Company.

Baltimore Streetcar Museum, 1901 Falls Road, Baltimore, MD 21211. Tel: (410) 547 0264. Website: www.baltimorestreetcar.org
Has a dedicated collection of cars from that city's history, ranging from rare examples of four-wheel cars to late-era Peter Witts and PCCs.

The National Capital Trolley Museum, 1313 Bonifant Road, Colesville, MD 20905-5955. Tel: (301) 384 6088. Website: www.dctrolley.org
Operates a mix of former Washington cars and other trolleys collected from the United States and overseas.

The Illinois Railway Museum, 7000 Olson Road, Union, IL 60180. Tel: (815) 923 4000. Website: www.irm.org
Has a variety of streetcars and interurban electrics including a cosmetically restored North Shore Electroliner and Chicago PCCs.

The East Troy Electric Railroad, 2002 Church Street, East Troy, WI 53120. Tel: (262) 642 3263. Website: www.easttroyrr.org
Operates one of the last vestiges of the extensive Milwaukee Electric system and features a variety of historic electric equipment.

Western Railway Museum, 5848 State Highway 12, Suisin, CA 94585. Tel: (707) 374 2978. Website: www.wrm.org

Southern California's Orange Empire Railway Museum offers visitors an opportunity to experience vintage trolley cars, including narrow-gauge LA Railways PCC car

One of the world's finest institutions for preserved electric railways. Its collection contains examples of many types of cars, ranging from wooden interurbans and single truck Birney safety cars to late-era PCCs and Key System's articulated Bridge Units. It has one of the longest rural lines of any operating electric museum in the United States, and a vast archive of electric railway literature and photographs.

Orange Empire Railway Museum, 2201 S. "A" Street, Perris, CA 92570.
Tel: (951) 943 3020. Website: www.oerm.org
Has preserved a variety of regional electric cars.

URBAN HISTORIC STREETCARS

In 1980s an urban electric railway renaissance began. Not only did city planners embrace new light-rail lines, but nostalgia developed too. In the streetcar's dark ages in the 1950s and 1960s, old trolleys had been kept alive only at rural museums where they would entertain families who had never known real streetcars with summer weekend rides.

San Francisco's cable cars had demonstrated the value of historic transport. Not only could streetcars be useful, but it turned out that they

were fun to ride! In the 1980s and 1990s, cities rediscovered their past glory and hoped to attract tourists with historic streetcar lines. A new generation would be able to glide through American urbanity with the sounds of an electric motor humming below their feet and the clang of a bell warding errant pedestrians from the tracks.

SAN PEDRO RED CARS

In San Pedro, California, Port of Los Angeles has hosted Pacific Electric recreation since 2003. This weekend-only service is operated by the Pacific Harbor Line and was part of a historic Pacific Electric route. Cars serve as both a tourist ride and public transport to four regular stops near historic San Pedro's downtown. Car number 1058 is an old trolley adapted from a Pacific Electric wooden-bodied design, while cars 500 and 501 are replicas of wooden-bodied Pacific Electric cars from the early twentieth century. Attention to detail including varnished wood and brass fittings makes them popular with visitors.

San Pedro Red Cars 500 and 501 are replicas of wooden-bodied Pacific Electric cars and patterned after vintage PE cars from the early twentieth century. Car 501 is seen working weekend service on a short section of former PE trackage operated by the Pacific Harbor Line.

Interior view of a restored PCC car operating in Kenosha, Wisconsin, in November 2008.

Some cities that had retained electric lines found means to restore historic cars, while cities that had completely abandoned their electric street railways decades earlier were keen to reinvent them. Attention to history has varied greatly. Boston's Matapan–Ashmont line never lost its PCCs, and in the 1990s, cosmetically backdated surviving examples to look like Boston cars from the 1940s. In a similar vein, SEPTA reopened its long-closed number 15 Girard-Avenue route with completely refurbished PCCs in 2005. Purists decry the addition of airconditioning "blisters" to the roofs of the vintage cars, but these are dressed in the old Philadelphia Transportation Company livery: green and cream with defining burgundy stripe.

Other cities have installed retro trolley operations in varying lengths, often as a tie-in with urban revitalization. Between 1982 and 2005, Seattle operated a waterfront trolley with imported cars from Melbourne, Australia. This was a prelude to its adoption of a modern light-rail system. Dallas, Texas; Fort Collins, Colorado; Memphis, Tennessee; Tampa, Florida; and Vancouver, British Columbia are among cities that regularly operate historic streetcars.

One of the most interesting urban streetcar revivals is the 2-mile streetcar loop at Kenosha, Wisconsin, where immaculately preserved PCCs

Following page: First, last, and always. San Francisco was the first city to embrace the cable-drawn streetcar. Today, its historic cars are a world-famous tourist attraction and a city icon. Yet, as late as the mid-1950s, San Francisco's civic officials tried to rid the city of its cable cars.

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are operated as part of the local transit system and provide a link to connect the Metra railroad station with downtown and a park facing Lake Michigan.

Although by 1994, streetcars operated only 3.8 percent of public transit vehicle miles in the US, down from 68.2 percent in 1926, they have experienced an amazing return to the city landscape and an important position in preservation experiences.

SAN FRANCISCO MUNI F LINE

America's most eclectic and intense application of historic trolley cars in regular service is San Francisco's Muni F-Market Line. Regular-revenue historic trolley services began in 1995. Key to the F-Market's success is its colorful fleet of PCCs and other historic cars. Each PCC is painted in a revived livery intended to represent cars from the various transit systems that once used them. Other historic cars include Peter Witts imported from Milan, Italy. In 2000, the F-line route was extended along the Embarcadero to a turn-back loop near the popular attractions at Fisherman's Wharf—a few blocks from the Powell & Mason cable-car terminus.

Italian cars meet on the streets of San Francisco in April 2008. A Peter Witt from Milan works along Market Street in F-line service, while a modern Ansaldo-Breda-designed articulated light-rail car pauses for passengers on Church Street.

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Milwaukee streetcars crossed the Menomonee River Valley on the 2,085ft Wells Street Viaduct, built about 1892. The structure served until the end of streetcar service in 1968.

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STREETCARS OF AMERICA

The handsome multicolored streetcar is a nostalgic icon of some of the most romantic and heritage-rich locales in America, including San Francisco, New Orleans and Chicago, and has been immortalized on stage and screen in classics including *Meet Me In St Louis* and *A Streetcar Named Desire*. *Streetcars of America* chronicles these vehicles from the earliest animal-drawn carriages to the height of their popularity in the 1920s, when there were more than 1,200 street railways, to the turning of the tide in the mid-twentieth century when congestion and attacks from the automobile industry eventually pushed streetcars from most urban landscapes. But it also looks at the recent efforts to revive their heritage that have led to vintage streetcars becoming a hip and environmentally friendly way to get to work, as well as a tourist attraction, in more than thirty cities including Memphis and Washington, DC.

Brian Solomon is the author of more than fifty books on railroads. He was editor of *Pacific Rail News* and has contributed to numerous specialist magazines.

John Gruber is a renowned railroad photographer and is a past President of the Center for Railroad Photography & Art, Madison, Wisconsin.

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